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March 16, 2000

UTILITY PATENT APPLICATION TRANSMITTAL LETTER

Assistant Commissioner of Patents
Box Patent Application
Washington, D.C. 20231

Sir:

Enclosed herewith for filing is the following utility
patent application:

Attorney Docket No.: OOCL-22 (3KH-00S0117)

Applicant: Yasuo ASAKURA

Title: ELECTRONIC STILL CAMERA

PATENT APPLICATION FILING FEE CALCULATION

| | <u>No. Filed</u> | <u>Less</u> | <u>Rate/Claim</u> | <u>Fee</u> |
|-------------|------------------|-------------|-----------------------------------|------------|
| Total | | | | |
| Claims | <u>19</u> | -20 | 0 x \$18.00 | \$ 00.00 |
| Independent | | | | |
| Claims | <u>5</u> | -3 | 2 x \$78.00 | \$ 156.00 |
| | | | Minimum Filing Fee | \$ 690.00 |
| | | | Multiple Dependency Fee | |
| | | | (if applicable - \$260.00) | \$ 00.00 |
| | | | 50% Reduction for Small Entity | |
| | | | (Independent Inventor, Non-profit | |
| | | | Corporation, or Small Business | |
| | | | Concern) - appropriate | |
| | | | verified statement attached | \$- 00.00 |
| | | | TOTAL FILING FEE | \$ 846.00 |
| | | | ASSIGNMENT RECORDATION | \$ 40.00 |
| | | | TOTAL FEES ENCLOSED | \$ 886.00 |

- ☒ Specification: 43 Total Pages (including claims and abstract)
- ☒ Drawing(s): 7 Total Sheets (FIGs. 1-7)

Also enclosed herewith for filing in connection with the enclosed application are:


- ☒ Our check in the amount of \$ 886.00 (the total filing fee) is enclosed herewith. If this check is unacceptable, insufficient or omitted, kindly charge the entire or additional filing fee, as appropriate, to the deposit account of **Straub & Pokotylo**, deposit account number **50-1049**. To facilitate that charge, a duplicate copy of this letter is enclosed herewith.
- ☒ Postcard Receipt;
- ☒ Preliminary Amendment (2 pps.);
- ☒ Oath or Declaration:
☒ Newly executed on March 9, 2000;
☐ Copy from a prior application (36 C.F.R. § 1.63(d));
- ☒ Assignment Papers to: OLYMPUS OPTICAL CO., LTD.;
- ☐ Information Disclosure Statement, modified PTO-1449, and () cited reference(s);
- ☐ Letter referencing previously filed disclosure document; number _____ filed _____;
- ☐ Verified Statement Claiming Small Entity Status:
☐ Newly executed on _____;
☐ Copy from a prior application , status still proper and desired;
- ☐ Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b);
- ☐ Microfiche Computer Program (Appendix);
- ☐ English translation document;

☐ Submission of Priority Document and a certified copy of a Japanese patent application or inventor's certificate, filed March 16, 1999 and assigned serial no. 11-007099, and a copy of a Japanese patent application or inventor's certificate, filed March 7, 2000, and assigned serial no. 2000-062385 upon which claims to priority are made; and

☐ Other: _____

Respectfully submitted,

STRAUB & POKOTYLO



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EXPRESS MAIL CERTIFICATION

"Express Mail" mailing label number: EL547453104US
Date of deposit: March 16, 2000

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Signature of person making certification

John C. Pokotylo

Name of person making certification

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

PATENT

Attorney Docket No.: OOCL-22 (3KH-00S0117)

Applicant: **Yasuo ASAKURA**

Serial No.: **Not yet assigned**

Filing Date: **Filed herewith**

Title: **ELECTRONIC STILL CAMERA**

Examiner: **Not yet assigned**

Group Art Unit: **Not yet assigned**

ASSISTANT COMMISSIONER FOR PATENTS
Box Patent Application
Washington, D. C. 20231

S I R:

PRELIMINARY AMENDMENT

Before examining the above referenced application,
please amend the application as follows:

IN THE CLAIMS:

Please amend claim 8 as follows:

Claim 8


Line 1, delete "or 7";

REMARKS

The claim 8 was amended to remove multiple dependencies.

Respectfully submitted,

March 16, 2000

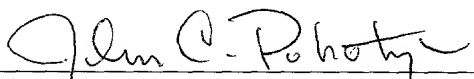

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Signature of person making certification

John C. Pokotylo
Name of person making certification

TITLE OF THE INVENTION

ELECTRONIC STILL CAMERA

CROSS-REFERENCE TO RELATED APPLICATIONS

5 This application is based upon and claims the
benefit of priority from the prior Japanese Patent
Applications No. 11-070099, filed March 16, 1999; and
No. 2000-062385, filed March 7, 2000, the entire
contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

10 The present invention relates to an electronic
still camera which picks up images with use of a solid
image-pickup device and particularly to an electronic
still camera which shortens the release time lag.

15 Widely spreading now are so-called electronic
still cameras in which an object image is formed on,
for example, a CCD two-dimensional image sensor by an
image pickup optical system and is converted into an
electric signal, and the image signal of a still image
thus obtained is recorded on a recording medium such as
20 a semiconductor memory or a magnetic disk.

25 This kind of electronic still camera generally
takes a quite longer time from when the power is turned
on to when operation can be transferred to image pickup
or from when a button is operated to when image pickup
action can be actually taken while the power is on than
a camera using a silver film. The latter time is a so-
called release time lag, electronic still cameras are

said to be weak in chances for good pictures because of the long release time lag.

Even in an electronic still camera as described above, it is possible to shorten the release time lag if a stand-by current is constantly kept flowing through the image pickup device and if preliminary operations for image pickup, e.g., automatic exposure, white balance adjustment, and automatic focus adjustment are constantly carried out at a high frequency.

However, in electronic still cameras, the capacity of a battery as a power source which electrically enables all the operations is limited. Consequently, preliminary operations for electric conductance of a stand-by current as described above or image pickup, which shorten the release time lag, are carried out thoughtlessly, the electric power is consumed awfully and the battery lifetime is very shortened.

BRIEF SUMMARY OF THE INVENTION

The present invention hence has an object of providing an electronic still camera which avoids wasteful power consumption as much as possible and efficiently uses the battery as a power source whose capacity is limited, so that the release time lag can be sufficiently shortened.

The present invention is based on a concept that preliminary operations are carried out only when an

intention of a user of a camera is estimated where a stand-by mode is set.

5 An electronic still camera according to the present invention comprises: a plurality of detection means provided respectively at different positions, for detecting contact or approach of a hand to make an image pickup operation; mode setup means for setting a stand-by mode in which a predetermined power and/or driving pulse is supplied to an image pickup device,
10 capable of commencing an image pickup operation immediately in response to a release instruction; and image pickup control means for executing a preliminary operation for image pickup if the stand-by mode is set by the mode setup means and all the plurality of
15 detection means detect the contact or approach.

In general, there are various ways in which a user holds a camera in case where the user does not particularly have an intention to make an image pickup operation. In this case, it is considered that a
20 plurality of detection means provided dispersedly at different positions of the camera rarely detect simultaneously contact or approach of a hand of the user. In contrast, in case where a user holds a camera with an intention to take a picture, the plurality of
25 detection means detect the contact or approach with a high possibility.

The present invention hence does not always carry

out electric conducting to the image pickup device and preliminary operations for image pickup but carries out the preliminary operations only when the plurality of detection means all detect contact or approach of a hand and an intention to make a preliminary operation is estimated, in a state where a stand-by mode including electric conducting to the image pickup device. In this manner, the release time lag, i.e., the time from a release instruction to entrance into an image pickup operation can be shortened without accompanying power consumption due to the preliminary operation.

Preferred embodiments of the present invention will be as follows.

(1) The electronic still camera may further comprise mode holding means using a non-volatile memory, for holding a setup state of the stand-by mode set by the mode setup means even during a power-off period.

If the setup state of the stand-by mode is maintained when the power source is off, it is possible to enter into an image pickup operation immediately when the power source is turned on next and a release instruction is supplied.

(2) The electronic still camera may A further comprise mode release means for releasing the stand-by mode when the stand-by mode is set by the mode setup means and a period in which at least one of the

plurality of detection means does not detect the contact or approach reaches a predetermined time.

5 If a state in which no image pickup operation is carried out continues for a long time period, the stand-by mode is thus released forcedly to avoid useless electric conducting to the image pickup device in the stand-by mode, so the power consumption can be saved much more.

10 (3) The electronic still camera may further comprise operation control means for rendering a part of the plurality of detection means operational, when the stand-by mode is set by the mode setup means and a period in which at least one of the plurality of detection means does not detect the contact or approach reaches a predetermined time.

15 That is, the plurality of detection means are not always rendered operational but are rendered operational step by step so that the detection means are sequentially electrically conducted. It is considered that the electric power consumption of these detection means is originally smaller than the power consumption necessary for the preliminary operation for image pickup. However, wasteful power consumption at the detection means can be prevented by thus

20 electrically conducting the detection means step by step.

(4) It is preferred that the plurality of

detection means are provided at least at a grip part and a release button part of a camera body.

The grip part and release button part are positions which a hand always contact when making an image pickup operation. Therefore, an intention to make an image pickup operation is accurately estimated by providing detection means at these positions, and the preliminary operation for image pickup can be carried out exactly.

(5) It is preferred that the preliminary operation includes at least automatic exposure, automatic focus adjustment, and automatic white balance adjustment.

These operations are preliminary operations of a general electronic still camera, and the present invention securely carries out these operations during the image pickup operation in the stand-by mode, so the release time lag can be sufficiently shortened. Also, electric conducting to an image pickup device may be included as a preliminary operation for image pickup.

Another electronic still camera according to the present invention is based on a concept that a preliminary operation for image pickup is carried out only in case where an intention of a user to make an image pickup operation is confirmed in a state where the power source is on. The electronic still camera comprises: detection means provided near a release

button, for detecting contact or approach of a hand to make an image pickup operation; a main power switch for switching on and off a power source of the camera; and image pickup control means for executing a preliminary operation for image pickup if the power switch is set on and the detection means detects the contact or approach.

An embodiment of another electronic still camera according to the present invention will be as follows.

(1) It is desirable that the preliminary operation includes at least electric conducting to an image pickup device.

According to the invention described above, it is possible to provide an electronic still camera capable of effectively shortening the release time lag while reducing wasteful power consumption which is consumed because preliminary operations for image pickup are always carried out and while effectively using the battery of the power source.

Another electronic still camera according to the present invention comprises: a plurality of detection means provided respectively at different positions, for detecting contact or approach of a hand; mode setup means for setting a stand-by mode in which a predetermined power and/or driving pulse is supplied to an image pickup device, capable of commencing an image pickup operation immediately upon a release

instruction; and image pickup control means for
executing a preliminary operation for image pickup if
the stand-by mode is set by the mode setup means and at
least one of the plurality of detection means detects
5 the contact or approach.

Also, in this structure, preliminary operations
for image pickup can be carried out only when at least
one of the plurality of detection means detects contact
or approach of a hand and an intention to make a
10 preliminary operation is estimated, in a state where a
stand-by mode including electric conducting to the
image pickup device. Accordingly, the release time lag,
i.e., the time from a release instruction to entrance
into an image pickup operation can be shortened without
15 accompanying power consumption due to the preliminary
operation.

A method for controlling an electronic still
camera according to the present invention comprises
steps of: detecting contact or approach of a hand to a
20 camera body, by a plurality of detection means provided
respectively at different positions; bringing an image
pickup system including at least an image pickup device
into a stand-by state in which the imaging pickup
system commences an image pickup operation immediately
25 in response to a release instruction; and executing a
preliminary operation for image pickup if the image
pickup system is in the stand-by state and at least one

of the plurality of detection means detects the contact or approach of the hand.

It is preferred that the preliminary operation is executed if all the plurality of detection means detect the contact or approach.

The present invention carries out the preliminary operations only when the plurality of detection means all detect contact or approach of a hand and an intention to make a preliminary operation is estimated, in a state where a stand-by mode including electric conducting to the image pickup device. In this manner, the release time lag, i.e., the time from a release instruction to entrance into an image pickup operation can be shortened without accompanying power consumption due to the preliminary operation.

Preferred embodiments of the present invention will be as follows.

(1) It is preferred that in the step of detecting, if the image pickup system is in the stand-by state and a part of the plurality of detection means detects the contact or approach of the hand to make an image pickup operation, another part of the plurality of detection means starts a detection operation.

That is, the plurality of detection means are not always rendered operational but are rendered operational step by step so that the detection means are sequentially electrically conducted. It is

considered that the electric power consumption of these detection means is originally smaller than the power consumption necessary for the preliminary operation for image pickup. However, wasteful power consumption at the detection means can be prevented by thus electrically conducting the detection means step by step.

(2) It is preferred that the plurality of detection means are provided at least at a grip part and a release button part of a camera body.

The grip part and release button part are positions which a hand always contact when making an image pickup operation. Therefore, an intention to make an image pickup operation is accurately estimated by providing detection means at these positions, and the preliminary operation for image pickup can be carried out exactly.

(3) The method for controlling further comprises a step of writing a setup of the image pickup system in the stand-by state into a non-volatile memory if an input for turning off a power source is given.

If the setup state of the stand-by mode is maintained when the power source is off, it is possible to enter into an image pickup operation immediately when the power source is turned on next and a release instruction is supplied.

(4) The method for controlling further comprises

a step of releasing the stand-by state when the stand-by state is set and a period in which at least one of the plurality of detection means does not detect the contact or approach of the hand reaches a predetermined
5 time.

If a state in which no image pickup operation is carried out continues for a long time period, the stand-by mode is thus released forcibly to avoid useless electric conducting to the image pickup device
10 in the stand-by mode, so the power consumption can be saved much more.

(5) It is preferred that the preliminary operation includes at least automatic exposure, automatic focus adjustment, and automatic white balance
15 adjustment.

These operations are preliminary operations of a general electronic still camera, and the present invention securely carries out these operations during the image pickup operation in the stand-by mode, so the
20 release time lag can be sufficiently shortened. Also, electric conducting to an image pickup device may be included as a preliminary operation for image pickup.

(6) It is preferred that the preliminary operation includes at least electric conducting to the
25 image pickup device.

According to the invention described above, it is possible to provide an electronic still camera capable

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always carried out and while effectively using the battery of the power source.

Additional objects and advantages of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of the instrumentalities and combinations particularly pointed out hereinafter.

10 BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate presently preferred embodiments of the invention, and together with the general description given above and the detailed description of the preferred embodiments given below, serve to explain the principles of the invention.

FIG. 1 is a block diagram showing the structure of an electronic still camera according to a first embodiment of the present invention.

FIG. 2A is a perspective view of the electronic still camera according to the first embodiment of the present invention, and FIG. 2B is a front view thereof.

FIG. 3 is a flowchart showing a processing procedure of image pickup operation in the embodiment.

FIG. 4A is a perspective view of the electronic still camera according to a second embodiment of the

present invention, and FIG. 4B is a front view thereof.

FIG. 5 is a flowchart showing another processing procedure of image pickup operation in the first embodiment.

5 FIG. 6 is an outer view showing a layout example of an image pickup estimation sensor in an electronic still camera according to a third embodiment.

FIG. 7 is a flowchart showing a processing procedure of image pickup operation in the embodiment.

10 DETAILED DESCRIPTION OF THE INVENTION

In the following, embodiments of the present invention will be explained with reference to the drawings.

(First Embodiment)

15 FIG. 1 is a block diagram showing the structure of an electronic still camera according to a first embodiment of the present invention. FIG. 2A is a perspective view of the electronic still camera according to the first embodiment of the present
20 invention, and FIG. 2B is a front view thereof. This electronic still camera can roughly be divided into a camera body 1 and a lens mirror cylinder 2.

Object light passes through an image pickup lens 3 provided in the lens mirror cylinder 2 and the light
25 amount is controlled by a diaphragm 4. The image pickup lens 3 is driven by an AF motor 5, and the diaphragm 4 is driven by a diaphragm motor 6. The

object light which has passed through the image pickup lens 3 and the diaphragm 4 is introduced into the camera body 1 and enters into a CCD two-dimensional color image sensor (hereinafter referred to simply as a
5 CCD) 7. In this manner, an object image is formed on the image pickup surface of the CCD 7.

In the CCD 7, the image pickup surface is constructed by arranging a plurality of pixels which perform photoelectric conversion in a two-dimensional
10 matrix, and a color filter is provided on the image pickup surface. The CCD 7 is driven by a CCD driver 8 and stores signal charges corresponding to an object image formed on the image pickup surface. The signal charges stored at the image pickup surface are read out
15 as electric signals called pixel signals from the CCD 7.

The pixel signals read from the CCD 7 are converted into a digital signal by an A/D converter 9 and are thereafter inputted to an image processing section 10, an AE (automatic exposure) processing 11,
20 an AF (Automatic focus adjustment) processing section 12, and an AWB (automatic white balance adjustment) section 13.

In the image processing section 10, processing such as separation of a color signal, CDS (correlative
25 double sampling), and the like is performed on the pixel signals thereby to generate a color image signal in a predetermined format.

The AE processing section 11 receives the digitalized pixel signals outputted from the A/D converter 9 and performs calculation processing mainly based on cumulative addition of the pixel signals from the respective pixels. Further, the AE processing section 11 obtains an AE evaluation value (photometric value) corresponding to the brightness of the object, based on the value of the cumulative addition, and controls the diaphragm 4 based on the AE evaluation value thereby to control the light amount. Further, the AE processing section 11 controls the charge storage time of the CCD 7 through the CCD driver 8 thereby to perform automatic exposure (AE) processing.

The AF processing section 12 receives the digitalized pixel signals outputted from the A/D converter 9 and extracts a high-frequency component of, for example, a pixel signal for one pixel. The AF processing section 12 performs calculation processing such as cumulative addition or the like on the extracted high-frequency component, thereby to calculate an AF evaluation value corresponding to a contour component amount in the high band side. Further, the AF processing section 12 controls the image pickup lens 3 in the optical axis direction through the AF motor 5, based on the AF evaluation value, thereby to perform automatic focus adjustment (AF) processing.

The AWB processing section 13 receives the digitalized pixel signals outputted from the A/D converter 9 and performs automatic white balance adjustment (AWB) processing. The automatic white balance adjustment processing means processing for controlling generation of a color image signal by the image processing section 10 so that the white color is properly reproduced independently from the color temperature of the object.

A buffer memory 14 is a storage device for temporarily storing a color image signal generated by the image processing section 10. The color image signal read from the buffer memory 14 is introduced to the display section 15, converted hereby into a form suitable for a display output, and thereafter supplied to a color liquid crystal display (LCD) 16 according to a TFT system where the signal is displayed as an image.

The buffer memory is further connected with a compression/expansion processing section 17 which is connected through a memory communication interface 18 to a memory card as a recording medium for recording image data and data appended thereto.

A compression/expansion processing section 17 is comprised of a compression processing section and an expansion processing section. The compression processing section reads an image signal stored in the buffer memory 14 and performs compression (coding)

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processing thereon, to encode the signal into a form
suitable for recording onto a memory card 19. The
expansion processing section reads an image signal
recorded on the memory card 19 and performs expansion
5 (decoding) processing thereon. The image signal thus
subjected to expansion processing is temporarily stored
into the buffer memory 14 and is outputted and
displayed on the liquid crystal display 16 through the
display processing section 15.

10 The memory card 19 is constructed by using a
semiconductor memory such as a card-type flash memory
or the like. Note that the recording medium comprised
in the electronic still camera according to the present
invention is not limited to this memory card 19 but may
15 be one of various forms, e.g., magnetic media such as a
hard disk, a floppy disk, and the like.

A system controller 20 serves to control
respective sections based on an instruction from an
operating section and is constructed by using a CPU.
20 Specifically, the system controller 20 controls the
image processing section 10, AE processing section 11,
AF processing section 12, AWB processing section 13,
buffer memory 14, display processing section 15,
compression/expansion processing section 17, memory
25 communication interface 18, and a power source
controller 26 which will be described later.

The operating section 21 is a device for allowing

a user to input instructions for operating the camera. The operating section 21 generates an instruction signal for executing various operations based on an input operation from a user and transmits the instruction signal to the system controller 20.

Specifically, the operating section 21 is provided with a main power switch 22 for generating an instruction signal to start the camera and perform power supply, a camera mode key input section 23 for specifying various modes concerning image pickup, display, recording and the like, a stand-by mode switch 24 for setting a stand-by mode, and a release switch 25 for generating an instruction signal to start image pickup operation.

The release switch 25 comprises a first-step release switch, and a second-step release switch. The first-step release switch is used to generate an instruction signal for starting AE processing, AF processing, and AWB processing which are preliminary operations prior to image pickup operation. The second-step releaser switch is used to generate an instruction signal for starting actual image pickup operation in response to the instruction signal generated by the first-step releaser switch.

Hereinafter, switching-on of only the first-step release switch is on is called a half-press, and switching-on of the second-step release switch together with the first-step release switch is on is called a

full-press.

The stand-by mode set by the stand-by mode switch 24 is a mode in which the camera can be switched over to image pickup operation immediately upon a release instruction, i.e., a full-press of the release switch 25 (e.g., when the first-step and second-step release switches are turned on). In this stand-by mode, a predetermined power and/or driving pulse is supplied to the CCD 7 by the CCD driver 8. Several other operations may be included.

The power controller 26 is connected with a battery 27 which serves as a power source of the camera. The power controller 26 performs control for supplying respective sections of the camera (e.g., the AF motor 5, diaphragm motor 6, CCD driver 8, A/D converter 9, image processing section 10, AE processing section 11, AF processing section 12, AWB processing section 13, buffer memory 14, display processing section 15, liquid crystal display 16, compression/expansion processing section 17, and memory communication interface 18) with a power source voltage, based on control by the system controller 20. Note that the system controller 20 is constantly supplied with the battery 27 through the power source controller 26.

An EEPROM 28 as a non-volatile memory is an electrically re-writable memory and is connected with the system controller 20. This EEPROM 28 previously

stores various control programs and data inputted through the camera mode key input section 23 used for performing various operations. Further, the EEPROM 28 stores and maintains a setup state of the stand-by mode when a standby-mode is set by the stand-by mode switch 24, as described later.

The system controller 20 performs control concerning maintenance of a setup state of the stand-by mode. Also, the system controller 20 is capable of appropriately releasing the stand-by mode held in the EEPROM 28. The system controller 20 is further connected with sensors 31, 32, and 33.

The sensors 31, 32, and 33 serve to detect contact or approach of a hand (including the palm and fingers) of a user to make image pickup operation. Therefore, the sensors are provided dispersedly at different positions so that the hand of a user can contact or come close to them during image pickup operation. In addition, these sensors 31, 32, and 33 are provided to estimate whether or not the user of the camera holds the camera with an intension to take a picture.

Each of the sensors 31, 32, and 33 is rendered operational by conducting predetermined electricity through the system controller 20. Accordingly, the system controller 20 has a function to control individually the operation states, i.e., presence or absence of electric conductance to each of the sensors

31, 32, and 33.

FIGS. 2A and 2B show an example of layout of the sensors 31, 32, and 33. As shown in each figure, the sensors 31, 32, and 33 are respectively provided at a grip part of the camera body 1, near the release button 35 as an operating part of the release switch 25 (a detectable range of the sensor 32 in the vicinity of the release button 35 will be hereinafter called a releaser button part), and at a position in the lower half of the outer circumferential surface of the lens mirror cylinder 2. Touch sensors such as pyroelectric sensors may be used for the sensors 31 and 33. Also, a photosensor or the like may be used for the sensor 32. The sensors 31, 32, and 33, however, may be basically any device as long as the device can detect contact or approach of a hand of a user.

Accordingly, when a user seizes the grip part of the camera body 1 by hand, the sensor 31 detects contact of a hand of the user. When the user puts a finger near the release button 35 to operate the releaser switch 25 to start image pickup, the sensor 32 detects approach of the finger. When the user further seizes the lens mirror cylinder 2, the sensor 33 detects contact or approach of a hand of the user. Since the sensor 33 is provided at a position in the lower half of the outer circumferential surface of the lens mirror cylinder 2, the sensor 33 contacts the hand

of the user and detects contact of a hand of a user in both of the case of holding the camera body 1 in a lateral position as shown in FIG. 2B and the case of holding it in a longitudinal position perpendicular to the lateral position.

The system controller 20 receives detection signal from the sensors 31, 32, and 33 individually. Further, the system controller 20 performs control for executing preliminary operations for image pickup when all the sensors 31, 32, and 33 are detect contact or approach of a hand of a user, i.e., when all the sensors are brought into a state for detecting contact or approach of a hand of the user to make image pickup operation. Note that the preliminary operations include at least electric conducting to the CCD 7 and processing of each of the AR processing section 11, AF processing section 12, and AWB processing section 13, i.e., processing of each of automatic exposure, automatic focus adjustment, and automatic white balance adjustment.

Next, with reference to the flowchart shown in FIG. 3, explanation will be made of the procedure of image pickup processing in the present embodiment and particularly the operation for shortening the release time lag. Note that these operations are realized as control by the system controller 20 and as processing made by the system controller 20 itself.

At first, the main power switch 22 is pressed down

and the power source is turned on (step S1). Then, various initial setups are carried out by the system controller 20 (step S1). Next, whether or not the switch 25 is half pressed, i.e., whether or not the first-step release switch is turned on is determined (step S2). If the release switch 25 is half pressed, AF processing (step S3), AE processing (step S4), and AWB processing (step S5) as preliminary operations are executed sequentially. Of course, if it is determined in the step S2 that the release switch 25 is half pressed, the predetermined power and/or driving pulse is supplied to the CCD 7. To execute the AF processing, AE processing, and AWB processing, the CCD 7 must be electrically conducted.

Next, whether or not the release switch 25 is full pressed, i.e., whether or not the second-step release switch is turned on in addition to the first-step release switch is determined (step S6). As a result of this determination, if the release switch 25 is full pressed, actual image pickup operation is carried out considering that a release instruction is issued, i.e., image pickup operation at the CCD 7 (step S7), image processing at the image processing section 10 (step S8), and recording onto the memory card 19 through the buffer memory 14, compression/expansion processing section 17, and the memory communication interface 18 (steps S9) are carried out sequentially. When

recording in the step S9 is finished and when the release switch 25 is not full pressed, the program returns to the step S2 and the operation as described above is repeated.

5 When the release switch 25 is thus half pressed, the preliminary operations for image pickup, i.e., the power and/or driving pulse is supplied to the CCD 7 and the processing in the steps S3, S4, and S5 are carried out. When the release switch 25 is full pressed
10 sequentially, the actual image pickup operation (step S7), image processing (step S8), and recording (step S8) are carried out. Execution of these operations is not related to whether or not a stand-by mode is set.

 Otherwise, if it is determined in the step S2 that
15 the release switch 25 is not half pressed, whether or not a stand-by mode is on, i.e., whether or not a stand-by mode is set by the stand-by mode switch 24 is determined (step S10). This determination is carried out by referring to the setup state of the standby mode
20 stored and maintained in an EEPROM 28.

 If the stand-by mode is on, the power is supplied to the sensor 31 at first (step S11). Further, whether or not the sensor 31 detects a hand of a user is determined subsequently (step S12).

25 As a result of this determination, if the sensor 31 detects a hand of the user, power is supplied to the sensor 32 and then brought into an operational state

(step S13). Subsequently, whether or not the sensor 32 detects approach of a hand of the user, i.e., whether or not a hand of the user has come close to the release switch 25 of the camera body 1 is determined (step S14).

5 Further, the power is supplied to the sensor 33 is electrically conducted and brought into an operational state, and whether or not the sensor 33 detects a hand of the user, i.e., whether or not a hand of the user is in contact with the lens mirror cylinder 2 is
10 determined (step S15). As for the order of the processing of the steps S14 and S15, any of these steps comes earlier.

In the steps S12, S14, and S15, if it is determined that the sensors 31, 32, and 33 are in a
15 detecting state in which they detect contact or approach of a hand of the user, the operation goes to the step S16 and the timer in the system controller 20 is reset. Thereafter, the operation goes to the step S3 and the processing in the steps S3 to S9 is carried
20 out.

That is, where the stand-by mode is set, if all the sensors 31, 32, and 33 are determined as being in the detecting state in which the sensors 31, 32, and 33 detect contact or approach of a hand of the user, it is
25 determined that the user of the camera has an intention to carry out image pickup operation, and the power and driving pulse supplying is supplied to the CCD 7, AF

processing in the step S3, AE processing in the step S4,
and AWB processing in the step S5 as preliminary
operations for image pickup. In this manner, it is
possible to enter into the actual image pickup
5 operation (steps S7, S8, and S9) immediately in
response to a full press of the release switch 25.

Otherwise, if it is determined in the step S12
that the sensor 31 does not detect contact of a hand of
the user or if it is determined in the steps S14 and
10 S15 that at least one the sensors 32 and 33 does not
detect contact or approach of a hand of the user, the
value of the timer in the system controller 20 is
incremented one by one at a predetermined time interval
during this no-detecting period (step S17). Further,
15 if it is determined in the step S18 that the value of
the timer has reached a setup value (time limit), the
stand-by mode stored and maintained in the EEPROM 28 is
released (step S19).

If the value of the time has not yet reached the
20 setup value of if the stand-by mode is released in the
step S19, whether or not the stand-by mode switch 24 is
turned on is determined next (step S20). If the stand-
by mode switch 24 is turned on in the step S20, the
stand-by mode is inverted to on from off (step S21),
25 and this state is stored and maintained in the
EEPROM 28.

If the stand-by mode is kept off in the step S20

or if the stand-by mode is inverted to on in the step S21, whether or not the power source is turned off by the main power switch 22 is determined in the step S22. If the power source is not off, i.e., if the power
5 source is kept on, the operation returns to the step S2, and the processing described above is repeated. If the power source is turned off in the step S22, all the processing ends (step S23).

Thus, in a state where the stand-by mode is set,
10 power and driving pulse supplying to the CCD 7, AF processing, AE processing, and AWB processing as preliminary operations for image pickup only are carried out only in the case where all the sensors 31, 32, and 33 are in their detecting states in which all
15 the sensors detect contact or approach of a hand of a user, like in the case where the release switch 25 is half pressed. Further, the operation is immediately shifted to image pickup operation in response to a full press of the release switch 25 as a release instruction
20 for starting image pickup, so the release time lag is shortened.

In a method in which not only power supplying to the CCD 7 but also AF processing, AE processing, and AWB processing are carried out as preliminary
25 operations for image pickup, for example, problems are caused as follows. That is, even when a user does not have an intention to carry out image pickup operation

immediately but merely holds or put a camera, the electric power is wastefully consumed for preliminary operations. In contrast, in the present embodiment, preliminary operations for image pickup are not carried out in a state where the camera is simply set in a stand-by mode but are carried out only when the user holds the camera to take a picture. Therefore, it is possible to realize shortening of the release time lag while reducing wasteful power consumption.

Also, in the present embodiment, the camera does not enter into preliminary operations in a state where the user does not have an intention to take a picture. This is because the camera enters into the preliminary operations only when all of a plurality of sensors 31, 32, and 33 are brought into detecting states in which the sensors detect contact or approach of a hand of the user.

In particular, the sensors 31 and 32 are provided respectively at the grip part and the release button part which are positions where a hand of the user must contact when making an image pickup operation. Hence, the camera can be shifted to preliminary operations by detecting an image pickup operation more steadily, without hindering the effect of shortening the release time lag.

Meanwhile, in the present invention, consideration must be taken into power consumption owing to providing

additionally the sensors 31, 32, and 33. However, the power consumption of these sensors 31, 32, and 33 is not originally large. In addition, in the present embodiment, the sensors 31, 32, and 33 are rendered
5 operational not simultaneously but one after another to make detection sequentially, and therefore, the substantial power consumption of each sensor is very small.

Also, the present embodiment has explained with
10 respect to the case where a part or all of the sensors 31, 32, and 33 are kept off (in non-detecting states) over a setup value of the timer in a state where the stand-by mode is set. In this case, wasteful electric supplying to the CCD 7 due to continuation of the
15 stand-by mode when the user does not have an intention to pick up an image is avoided by forcedly releasing the stand-by mode, so the power consumption can be saved much more.

(Second Embodiment)

20 FIGS. 4A and 4B show an example of layout of sensors in an electronic still camera according to another embodiment of the present invention. In the present embodiment, the sensor 31 is provided in the front surface side of the grip part of the camera body
25 1 and a sensor 34 is provided in the side surface side of the of the grip part. Like in the first embodiment, the sensor 32 is provided at the release button part.

The sensor 34 is thus additionally provided to respond to various ways of holding the camera. For example, when the camera is held longitudinally with the grip part situated lower as shown in FIG. 4B, the sensor 34 securely detects a hand of the user even if the sensor 31 does not detect a hand of the user. Accordingly, in the present embodiment, it is determined that the user has an intention to take a picture and preliminary operations are carried out for taking a picture if at least one of the sensors 31 and 34 is on and if the sensor 32 is on in a state where the stand-by mode is set. As a result, it is possible to attain the same effect as that of the foregoing embodiment.

Although the sensor 33 as shown in FIGS. 2A and 2B is not provided at the side surface part of the lens mirror cylinder 2 the present embodiment, the sensor 33 may be added. In this case, preliminary operations for image pickup may be carried out when at least one of the sensors 31 and 34 is on and the sensors 32 and 33 are on in a state where the stand-by mode is set.

Next, with reference to the flowchart shown in FIG. 5, explanation will be made of another example of operation for shortening the release time lag in the embodiment described above. These operations are realized as control by the system controller 20 and the processing of the system controller 20 itself.

In FIG. 5, the same processing steps as those in FIG. 3 will be denoted at the same references, and different points from FIG. 3 will be explained.

The operation in FIG. 5 differs from that of FIG. 3 in that when the timer is reset in the step S16, the CCD 7 is electrically conducted in a step S24 and the operation thereafter returns to the step S2.

Thus, the preliminary operations for image pickup, including the supplying of the power and/or driving pulse to the CCD 7, are carried out if the power source of the camera is set on by the main power switch 22, if the switch 32 is determined as a detecting state in which the switch 32 detects contact or approach of a hand of a user, and if an intention of the user to make an image pickup operation is confirmed. As a result, it is possible to obtain the same effect as obtained by the operation in FIG. 3. In this operation example, the power and/or driving pulse is not supplied to the CCD 7 for the first time when the release button is half pressed. That is, in a state where the stand-by mode is set, the CCD 7 is drawn to an operating state thereof immediately if all the sensors 31, 32, and 33 are on. The operation further goes to the step S2, and AF processing (step S3), AE processing (step S4), and AWB processing (step S5) can be executed immediately without waiting for electric conducting to the CCD 7. The release time lag can be shortened much more.

(Third Embodiment)

FIG. 6 shows a layout example of sensors in an electronic still camera according to further another embodiment of the present invention. The present
5 embodiment includes only the sensor 32 provided in the vicinity of the release button 35 and is characterized in that preliminary operations for image pickup are carried out if the power source is set on by the main power switch 22 and if the sensor 32 has detect contact
10 or approach of a hand of a user.

Next, with reference to the flowchart shown in FIG. 7, explanation will be made of an example of operation for shortening the release time lag in the present embodiment. These operations are released as
15 control by the system controller 20 and processing of the system controller 20 itself.

The processing steps S0 to S9 in FIG. 7 are the same as those in FIGS. 3 and 5. That is, when the main power switch 22 is pressed down and the power source is
20 turned on (step S0), various initial setups are carried out by the system controller 20 (step S1). Next, whether or not the release switch 25 is half pressed by the user, i.e., whether or not the first-step release switch is turned on is determined (step S2). If it is
25 determined in the step S2 that the release switch 25 half pressed, AF processing (step S3), AE processing (step S4), and AWB processing (step S5) as preliminary

operations for image pickup are sequentially executed.

Subsequently, whether or not the release switch 25 is full pressed, i.e., whether or not the second-step release switch is turned on in addition to the first-
5 step release switch is determined (step S6). As a result of this determination, if the release switch 25 is full pressed, actual image pickup operation is carried out considering that a release instruction is issued, i.e., image pickup operation at the CCD 5 (step
10 S7), image processing at the image processing section 10 (step S8), and recording onto the memory card 19 through the buffer memory 14, compression/expansion processing section 17, and the memory communication interface 18 (steps S9) are carried out sequentially.
15 When recording in the step S9 is finished and when the release switch 25 is not full pressed, the procedure returns to the step S2 and the operation as described above is repeated.

When the release switch 25 is thus half pressed,
20 the preliminary operations for image pickup (steps S3, S4, and S5) are carried out. When the release switch 25 is full pressed sequentially, the actual image pickup operation (step S7), image processing (step S8), and recording (step S8) are carried out.

25 Otherwise, if it is determined in the step S2 that the release switch 25 is not half pressed, the same processing as in the steps S13 and S14 shown in FIGS. 3

and 5 is carried out. That is, the sensor 31 is drawn to the operating state at first (step S31), and subsequently, whether or not the sensor 32 detects contact or approach of a hand of the user, i.e., whether or not a hand of the user is close to the release switch 25 of the camera body 1 is determined (step S32).

If it is then determined in the step S32 that the sensor 32 is in a detecting state in which a hand of the user is close to the release switch 25, the CCD 7 is electrically conducted as a preliminary operation for image pickup (step S33). Subsequently, the operation returns to the step S2 and the processing in the steps S2 to S9 described above is repeated. That is, when the sensor 32 detects contact or approach of a hand of the user in a state where the stand-by mode is set, it is determined that the user of the camera has an intention to carry out image pickup operation, and the electric conducting to the CCD 7 is carried out as a preliminary operation for image pickup are carried out. At this time, if the release switch is half pressed, the AF processing in the step S3, AE processing in the step S4, and AWB processing in the step S5 as other preliminary operations for image pickup are further carried out. In this manner, it is possible to enter into the actual image pickup operation (steps S7, S8, and S9) immediately in

response to a full press of the release switch 25.

Otherwise, if it is determined in the step S42 that the sensor 32 does not detect contact or approach of a hand of the user, whether or not the power source has been turned off by the main power switch 22 is
5 determined in the step S22. If the power source is not off, i.e., if the power source is kept on, the operation returns to the step S2, and the processing described above is repeated. Otherwise, if the power
10 source is turned off in the step S22, all the processing ends (step S23).

In the present embodiment, as shown in FIG. 7, if the power source is set on by the main power switch 22 and if the sensor 32 detects contact or approach of a
15 hand of a user, preliminary operations for image pickup are carried out. In this respect, the structure may be arranged in consideration of setup of the stand-by mode, like in the electronic image pickup device explained in the first and second embodiments. That is, electric
20 conducting to the CCD 7 may be started if the sensor detects contact or approach of a hand of the user in a state where the power source is set on by the main power switch 22 and the stand-by mode is set, and further, preliminary operations for image pickup may be
25 executed if the release switch 25 is half pressed.

Additional advantages and modifications will readily occur to those skilled in the art. Therefore,

the present invention in its broader aspects is not limited to the specific details, representative devices, and illustrated examples shown and described herein.

Accordingly, various modifications may be made without

5 departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.

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WHAT IS CLAIMED IS:

1. An electronic still camera comprising:
a plurality of detection means provided
respectively at different positions, for detecting
5 contact or approach of a hand to make an image pickup
operation;

mode setup means for setting a stand-by mode in
which a predetermined power and/or driving pulse is
supplied to an image pickup device, capable of
10 commencing an image pickup operation immediately in
response to a release instruction; and

image pickup control means for executing a
preliminary operation for image pickup if the stand-by
mode is set by the mode setup means and all the
15 plurality of detection means detect the contact or
approach.

2. A camera according to claim 1, further
comprising mode holding means using a non-volatile
memory, for holding a setup state of the stand-by mode
20 set by the mode setup means even during a power-off
period.

3. A camera according to claim 1, further
comprising mode release means for releasing the stand-
by mode when the stand-by mode is set by the mode setup
25 means and a period in which at least one of the
plurality of detection means does not detect the
contact or approach reaches a predetermined time.

4. A camera according to claim 1, further comprising operation control means for rendering a part of the plurality of detection means operational, when the stand-by mode is set by the mode setup means and a
5 period in which at least one of the plurality of detection means does not detect the contact or approach reaches a predetermined time.

5. A camera according to claim 1, wherein the plurality of detection means are provided at least at a
10 grip part and a release button part of a camera body.

6. A camera according to claim 1, wherein the preliminary operation includes at least automatic exposure, automatic focus adjustment, and automatic white balance adjustment.

15 7. An electronic still camera comprising:
detection means provided near a release button, for detecting contact or approach of a hand to make an image pickup operation;

20 a main power switch for switching on and off a power source of the camera; and

image pickup control means for executing a preliminary operation for image pickup if the power switch is set on and the detection means detects the contact or approach.

25 8. A camera according to claim 1 or 7, wherein the preliminary operation includes at least electric conducting to an image pickup device.

9. An electronic still camera comprising:
a plurality of detection means provided
respectively at different positions, for detecting
contact or approach of a hand;

5 mode setup means for setting a stand-by mode in
which a predetermined power and/or driving pulse is
supplied to an image pickup device, capable of
commencing an image pickup operation immediately in
response to a release instruction; and

10 image pickup control means for executing a
preliminary operation for image pickup if the stand-by
mode is set by the mode setup means and at least one of
the plurality of detection means detects the contact or
approach.

15 10. A method for controlling an electronic still
camera, comprising steps of:

detecting contact or approach of a hand to a
camera body, by a plurality of detection means provided
respectively at different positions;

20 bringing an image pickup system including at least
an image pickup device into a stand-by state in which
the image pickup system commences an image pickup
operation immediately in response to a release
instruction; and

25 executing a preliminary operation for image pickup
if the image pickup system is in the stand-by state and
at least one of the plurality of detection means

detects the contact or approach of the hand.

11. A method according to claim 10, wherein the preliminary operation is executed if all the plurality of detection means detect the contact or approach.

5 12. A method according to claim 11, wherein in the step of detecting, if the image pickup system is in the stand-by state and a part of the plurality of detection means detects the contact or approach of the hand to make an image pickup operation, another part of the
10 plurality of detection means starts a detection operation.

13. A method according to claim 10, wherein the plurality of detection means are provided at least at a grip part and a release button part of a camera body.

15 14. A method according to claim 10, further comprising a step of writing a setup of the image pickup system in the stand-by state into a non-volatile memory if an input for turning off a power source is given.

20 15. A method according to claim 10, further comprising a step of releasing the stand-by state when the stand-by state is set and a period in which at least one of the plurality of detection means does not detect the contact or approach of the hand reaches a
25 predetermined time.

16. A method according to claim 10, wherein the preliminary operation includes at least automatic

exposure, automatic focus adjustment, and automatic white balance adjustment.

17. A method according to claim 10, wherein the preliminary operation includes at least electric
5 conducting to the image pickup device.

18. A method for controlling an electronic still camera, comprising steps of:

detecting contact or approach of a hand by
detection means provided near a release button;
10 switching on and off a main power source of the camera; and

executing a preliminary operation for image pickup if the main power source is on and the plurality of detection means detects the contact or approach of the
15 hand.

19. A method according to claim 18, wherein the preliminary operation includes at least electric conducting to an image pickup device.

ABSTRACT OF THE DISCLOSURE

An electronic still camera includes a stand-by mode switch and is capable of setting a stand-by mode in which a power and/or driving pulse is supplied to a CCD so that the mode can immediately shift to an image pickup operation upon a release instruction by a release switch. In the camera, a plurality of sensors for detecting contact or approach of a hand to make an image pickup operation are provided dispersedly at different positions, respectively. If the stand-by mode is set by the stand-by mode switch and all the sensors detect contact or approach of the hand, each processing in an AE processing section, AF processing section, and AWB processing section is carried out as a preliminary operation for image pickup.

2025 RELEASE UNDER E.O. 14176

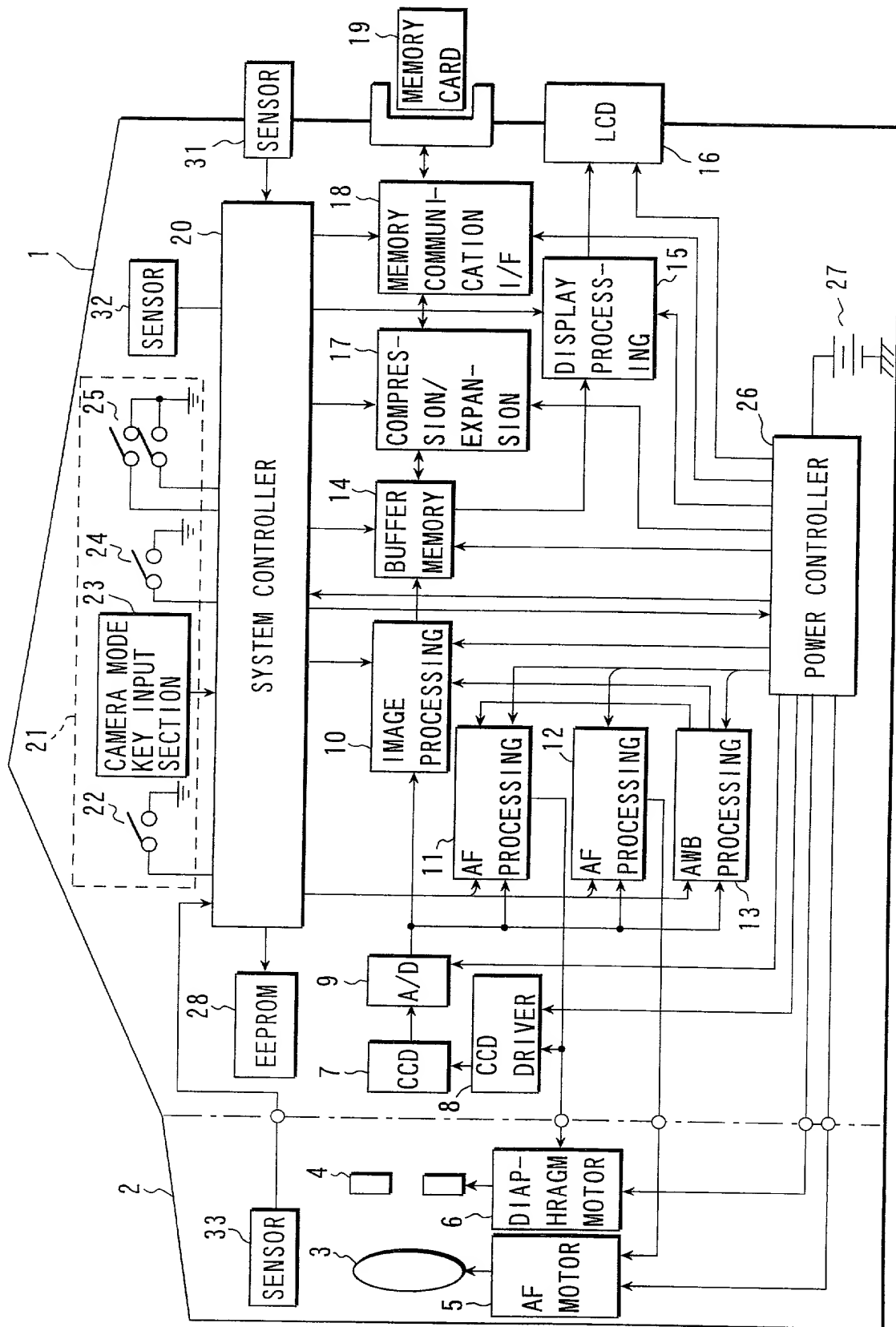


FIG. 1

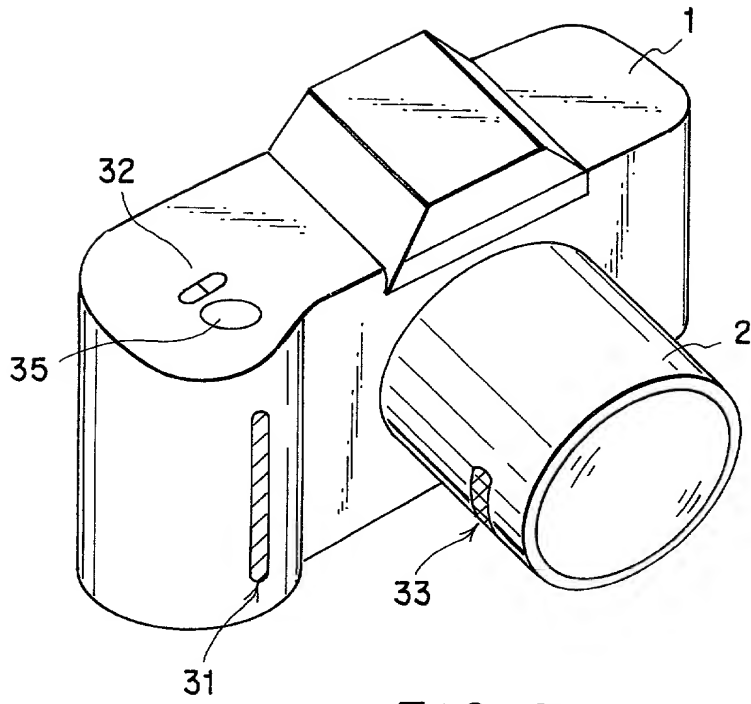


FIG. 2A

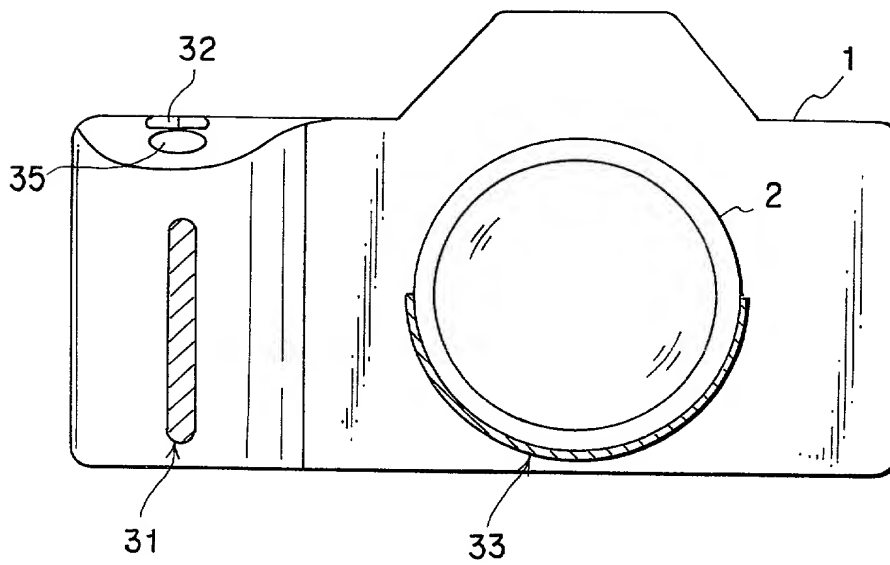


FIG. 2B

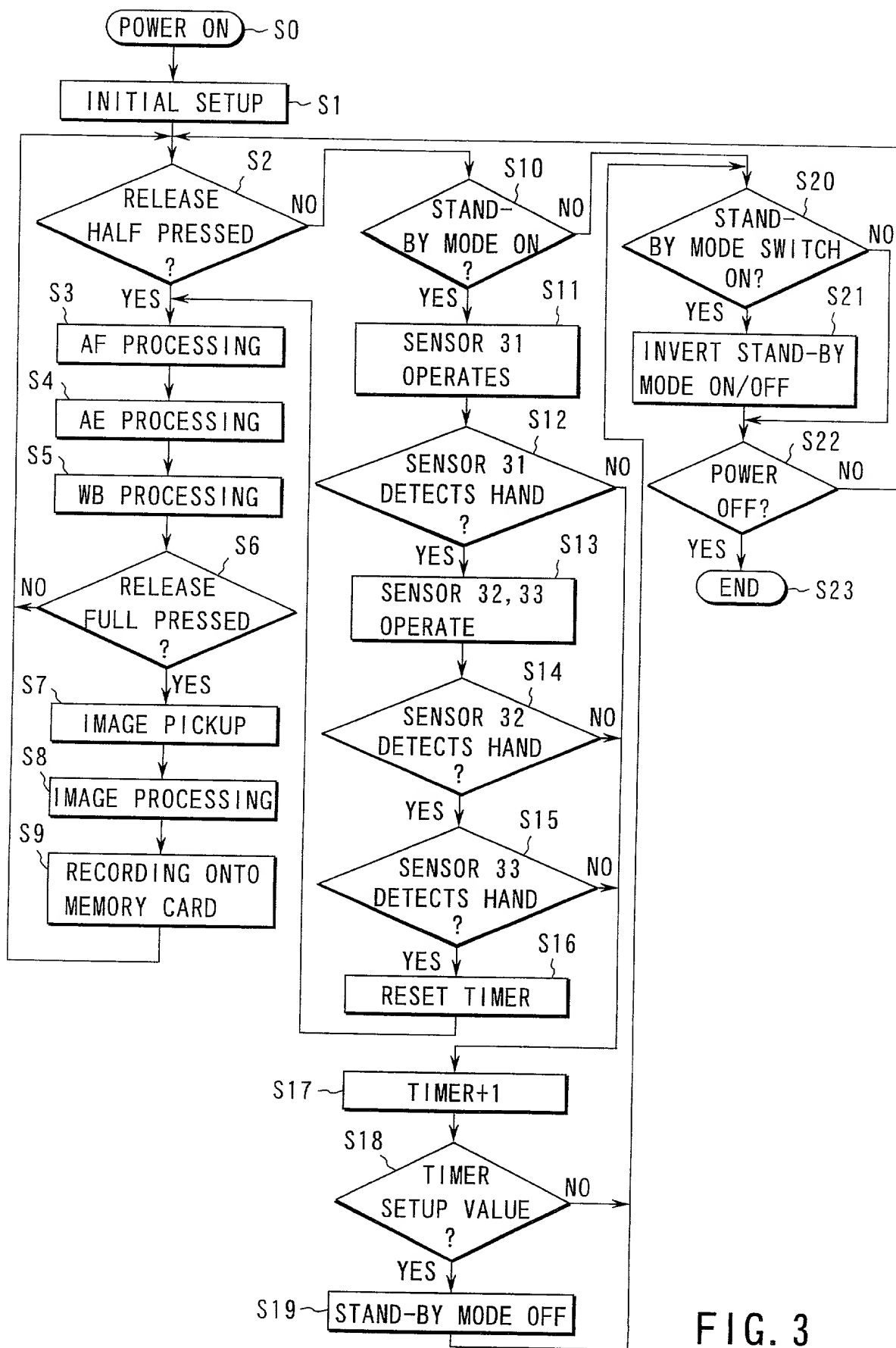
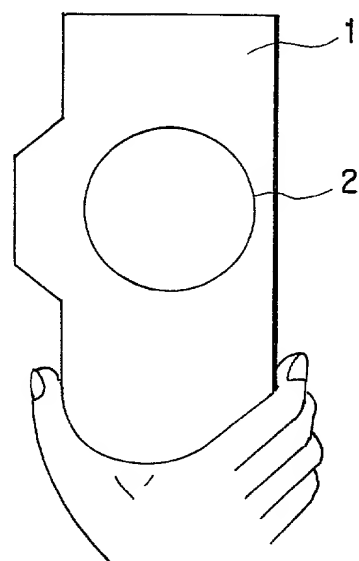
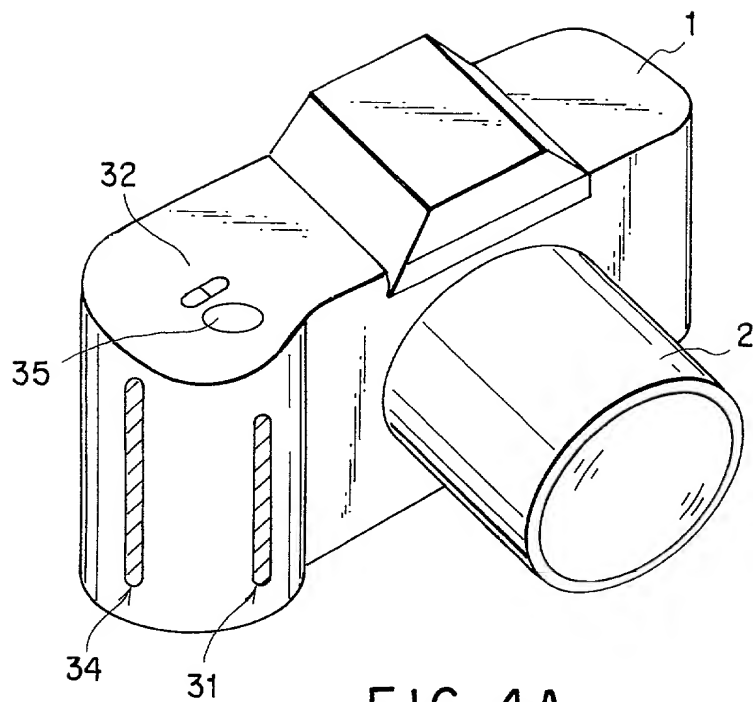


FIG. 3



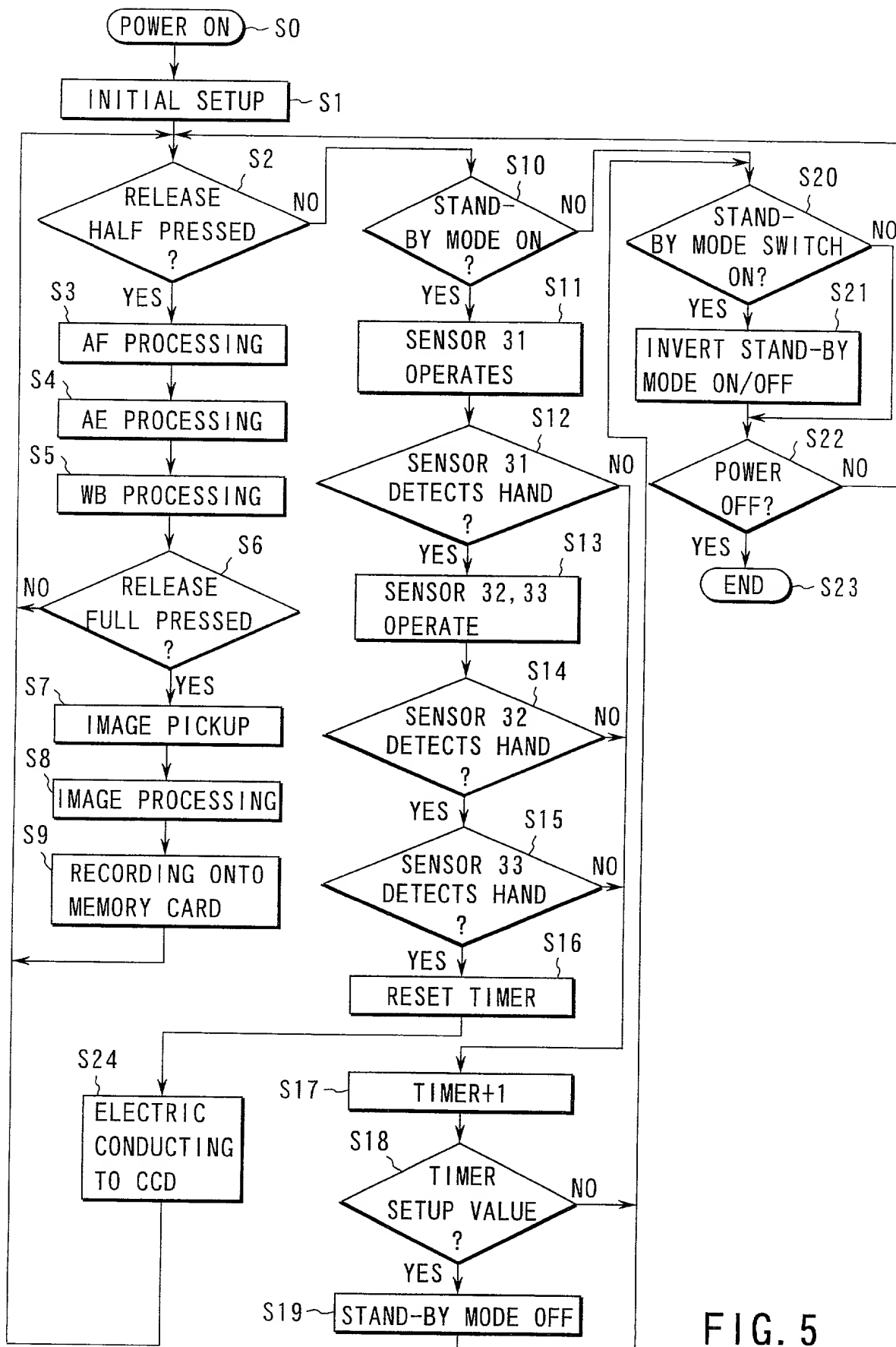


FIG. 5

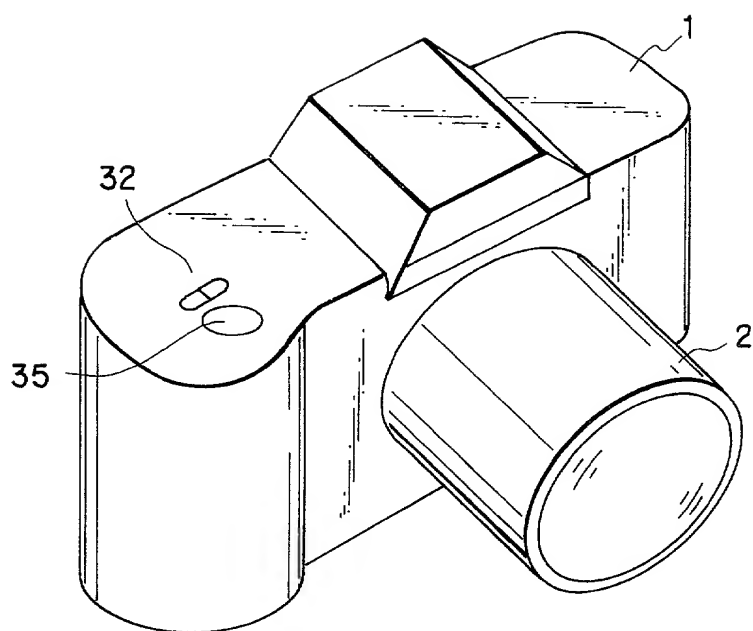


FIG. 6

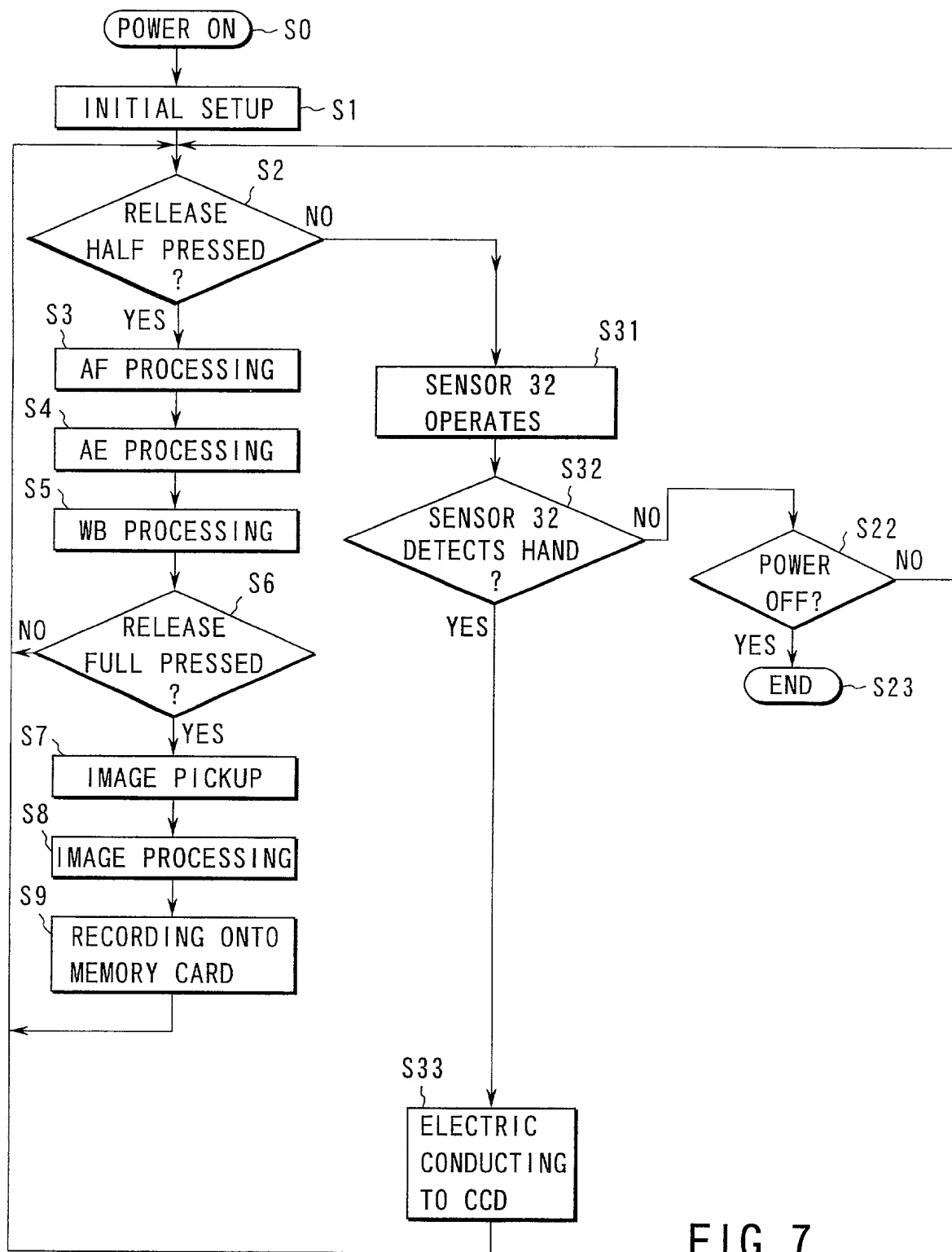


FIG. 7

Declaration Power of Attorney For Patent Application

特許出願宣言書及び委任状 Japanese Language Declaration 日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の横に記載された通りです。

My residence, post office address and citizenship are as stated below next to my name,

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

電子スチルカメラ

ELECTRONIC STILL CAMERA

上記発明の明細書（下記の欄で×印がついていない場合は、本書に添付）は、

The specification of which is attached hereto unless the following box is checked:

☐ _____ 月 _____ 日に

提出され米国出願番号または特許協定条約

☐ was filed on _____
as United States Application Number or
PCT international Application Number

国際出願番号を _____ とし、

（該当する場合） _____ 月 _____ 日に訂正されました。

_____ and was amended on

_____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56

Japanese Language Declaration

(日本語宣言書)

私は、合衆国法典第35編第119条(a)-(d)項又は第365条(b)に基づき下記の、米国以外の国の少なくとも一カ国を指定している特許協力条約365(a)項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

I hereby claim foreign priority under Title 35, United States Code, Section 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

外国での先行出願

Priority Not Claimed

優先権の主張なし

11-070099

JAPAN

16/03/1999

(Number)
(番号)(Country)
(国名)(Day/Month/Year Filed)
(出願年月日)☐

2000-062385

JAPAN

07/03/2000

☐☐☐☐

私は、第35編米国法典119条(e)項に基づいて下記の米国特許出願規定に記載された権利をここに主張いたします。

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below

(Application No.)
(出願番号)(Filing Date)
(出願日)(Application No.)
(出願番号)(Filing Date)
(出願日)

私は、下記の米国法典第35編120条に基づいて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約365条(c)に基づき権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1条56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) or 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT Information application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which become available between the filing date of the prior application and the national or PCT international filing date of application:

(Application No.)
(出願番号)(Filing Date)
(出願日)(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)(Application No.)
(出願番号)(Filing Date)
(出願日)(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

私は、私自身の知識に基づいて本宣言書中で私が行う表明が真実であり、かつ私の入手した情報と私の信じることに基づき表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行えば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration

(日本語宣言書)

委任状：私は、下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。
(弁理士、または代理人の氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

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(第二以降の共同発明者に対しても同様に記載し、署名をすること。)

(Supply similar information and signature for second and subsequent joint inventors.)

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